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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,277	08/18/2003	Diane K. Jofuku	2750-1574P	2470

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BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER	
JOHANNSEN, DIANA B	
ART UNIT	PAPER NUMBER
1634	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	01/18/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 01/18/2007.

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Office Action Summary	Application No.	Applicant(s)	
	10/642,277	JOFUKU ET AL.	
	Examiner	Art Unit	
	Diana B. Johannsen	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) *1-23,29-30, 36 in part, and 37-40* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *24-28 and 31-36* is/are rejected.

7)☒ Claim(s) *36* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group III, claims 24-28, 31-35, and 36 in part, in the reply filed on October 26, 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 1-23, 29-30, and 37-40, as well as claim 36 to the extent that it is drawn to the invention of Group IV, are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on October 26, 2006.

Information Disclosure Statement

3. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Application Data Sheet

4. The Supplemental Application Data Sheet filed October 10, 2006 is noted. It appears that the Supplemental ADS has been submitted to correct an error in the filing date of provisional application no. 60/121,700, which was incorrectly listed in both the

originally filed specification and in the Oath/Declaration of March 22, 2004 as being October 25, 1999 (rather than February 25, 1999). However, the supplemental ADS is incomplete and contains inaccuracies. With regard to applicants' priority claim, the ADS contains (in the "Domestic Priority Information" section) a reference to a "parent application" having application number "10/624,277" with a filing date of 8/18/03, but includes no reference to the actual parent application 09/512,882, filed 2/25/00. Further, the ADS contains other errors (for example, a lack of complete applicant information, inaccurate information regarding sequence submission and CRF, etc.). Thus, the supplemental ADS does not meet the requirements for a supplemental ADS as set forth in 37 CFR 1.76(c) and discussed in MPEP 601.05. Because the supplemental ADS now of record is likely to confuse the record, a new supplemental ADS containing accurate and complete information is required.

Further, as the text of the specification presently recites an incorrect filing date for provisional application 60/121,700, it is suggested that applicant may also wish to amend the specification to correct this error.

Specification

5. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

6. With regard to the amendment at page 20 of the specification in the recitation of SEQ ID NO: 6 (amendment filed July 26, 2006), it is noted that the deletion of "O" and insertion of "Q" constitutes the correction of an obvious typographical error and does not

introduce new matter. The originally filed sequence listing indicated a glutamine at the position corresponding to the "O" in the originally filed specification; further, none of the 20 amino acids are identified by the letter "O", and it is an inherent property of the codons CAG and CAA that they encode glutamine.

Claim Objections

7. Claim 36 is objected to because of the following informalities: the claim depends (in the alternative) from a withdrawn claim (claim 30).

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 24-28 and 31-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 24-28 are indefinite over the recitation of the term "identifying". The specification does not provide a clear definitions of this terminology, and it is unclear as to what actual steps would be encompassed by this language. Particularly, it is unclear as to whether the step of "identifying" requires an actual manipulation or action, or whether this language could encompass solely mental steps of "identification". Thus, this language does not clearly apprise one of skill in the art as to what is and is not encompassed by the claims.

Claims 24-28 are indefinite over the recitation of the limitation "the corresponding nucleotides" in (b)(i) of claims 24 and 28. First, there is insufficient

antecedent basis for this language, as the claims do not previously refer to "corresponding nucleotides". Second, it is unclear as to what types of relationships between nucleotides would be considered to constitute a "correspondence". Clarification is required.

Claims 24-28 are indefinite over the recitation of the limitations "the most preferred codon" and "the desired amino acid" in (b)(ii) of claims 24 and 28, and (c)(ii) of claims 24 and 28. There is insufficient antecedent basis for these limitations in the claims.

Claims 24-28 are indefinite over the recitation of the limitation "the target plant species" in claims 24 and 28, (b)(ii) and (c)(ii). There is insufficient antecedent basis for this limitation in the claims.

Claims 24-28 are indefinite over the recitation of the limitation "the corresponding position" in claims 24 and 28, (c)(i). There is insufficient antecedent basis for this limitation in the claims.

Claims 24-27 are indefinite because it is unclear whether the claims are drawn to methods for isolating a "target polynucleotide", as recited in the preamble of claim 24, or to methods of isolating a "product," as set forth in the final method step of claim 24. The claims do not make clear how isolation of the "product" results in isolation of a target polynucleotide.

Claim 28 is indefinite because it is unclear whether the claim is drawn to a method for identifying a "target polynucleotide", as set forth in the claim preamble, or to methods of determining the nucleotide sequence of a product, as set forth in the final

method step. The claim does not set forth how determination of the sequence of a product results in or relates to identification of the target polynucleotide.

Claims 31-36 are indefinite over the recitation of the terms "selecting" and "substituting," and because it is unclear how the method steps of the claims would result in "cloning," as set forth in the preamble of claim 31. It is unclear whether these terms refer to actual active method steps, or whether the claims may encompass, e.g., a mental process of "selecting" a sequence or "substituting" a nucleotide. Further, it is unclear whether or how the recited steps of the claimed method actually result in "cloning;" the language of the claims gives no indication of a relationship between the recited method steps and the act of cloning. The claims should be amended so as to set forth the actual active steps necessary to carry out the claimed methods.

Claims 31-36 are indefinite over the recitation of the term "desired amino acid sequence". It is unclear what types of sequences might be encompassed by this language, and how a "desired amino acid sequence" would differ from any other "amino acid sequence". Clarification is required.

Claims 31-36 are indefinite over the recitation of the limitation "the preferred codon". There is insufficient antecedent basis for this limitation in the claims.

Claims 32-36 are indefinite over the recitation of the phrase "synthesizing an upstream oligonucleotide primer, or a portion thereof according to steps (b) and (c)". As steps (b) and (c) of claim 31 do not refer to synthesis of an "upstream oligonucleotide primer", it is unclear what is meant by this phrase.

Claims 33-36 are indefinite over the recitation of the limitation "said upstream and

downstream primers". There is insufficient antecedent basis for this limitation in the claims.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 24-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Fletcher et al (Gene 129(2):167-174 [1993]).

Fletcher et al disclose methods of isolating and identifying novel genes using PCR with primers incorporating codon bias information (see entire reference). Fletcher et al et al teach that "protein-coding genes of *P. carinii* exhibit a significant bias in codon usage as demonstrated by the preference for A or T in the third position of the codons" (see page 168, left column). Fletcher et al designed "A + T-biased oligo primers based on conserved regions" of several genes (see page 168, left column), and successfully employed their primers to isolated and identify homologous genes in *P. carinii* (see entire reference, particularly Figure 1). It is noted that several of the primer pairs designed and used by Fletcher et al meet the requirements of (b) and (c) of independent claims 24 and 28, while the PCR reactions and isolation of products disclosed by Fletcher et al meet the requirements of steps (d)-(g). Regarding dependent claims 25-26, see, e.g., A, B and C of Figure 1 for examples of primer pairs separated by "at least 30 amino acids" and encoding "between 6 to 11 amino acids."

Regarding claim 27, Fletcher et al disclose cloning their PCR products into vectors (see description of Figure 1). Fletcher et al therefore disclose methods anticipating claims 24-28.

12. Claim 31 is rejected under 35 U.S.C. 102(b) as being anticipated by Seed et al (WO 97/11086 A1 [3/1997]).

The claim is drawn to a method of cloning comprising steps of "selecting" upstream and downstream nucleotide sequences (step (a)) and further "selecting" nucleotides for the third position of each codon of said upstream and downstream sequences, wherein the "preferred codon for a target organism" is employed "provided said nucleotide is guanine or cytosine" (step (b)), but wherein guanine or cytosine is substituted "if the nucleotide of the third position of the preferred codon is adenine or thymine....to avoid introducing a poly-guanylate or polycytidylate sequence of more than four residues" (step (c)).

Seed et al disclose methods for preparing synthetic genes comprising "identifying non-preferred and less-preferred codons in the natural gene encoding the protein and replacing one or more of the non-preferred and less-preferred codons with a preferred codon encoding the same amino acid as the replaced codon" (see pages 3-4). Seed et al disclose the cloning of their synthetic genes into vectors (see, e.g., pages 4, 12). Seed et al disclose the replacement of multiple (as well as all) non-preferred or less-preferred codons in a gene, and therefore inherently disclose "selecting" both upstream and downstream sequences for codon replacement (see entire reference, particularly pages 4-5, 12). Seed et al disclose replacing codons having A or T in the third position

with those having G or C in the third position, based on the preference for G/C found in human genes (see entire reference, particularly, e.g., pages 5, 12, 17; Figure 1). Seed et al therefore disclose methods meeting all the requirements of the instant claim.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. Claims 31-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fletcher et al (Gene 129(2):167-174 [1993]) in view of Tyson et al (DNA Sequence 5(6):339-351 [1995]).

Fletcher et al disclose methods of isolating and identifying novel genes using PCR with primers incorporating codon bias information (see entire reference). Fletcher et al et al teach that "protein-coding genes of *P. carinii* exhibit a significant bias in codon

usage as demonstrated by the preference for A or T in the third position of the codons" (see page 168, left column). Fletcher et al designed "A + T-biased oligo primers based on conserved regions" of several genes (see page 168, left column), and successfully employed their primers to isolated and identify homologous genes in *P. carinii* (see entire reference, particularly Figure 1). Fletcher et al disclose cloning their PCR products into vectors (see description of Figure 1). The target sequences, primer pairs and method steps of Fletcher et al meet the requirements of the instant claims, with the exception that Fletcher et al use A/T at the third position of codons (rather than G/C, as set forth in the instant claims) as a result of the A/T codon bias exhibited by their target organism, *P. carinii*.

Tyson et al disclose that codon preferences vary in different organisms and in dicot plants as compared to monocots (see entire reference, particularly page 339). In view of the teachings of Tyson et al, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to have modified the invention of Fletcher et al so as to have used G/C at the third position of codons (rather than A/T) when isolating and identifying genes in any organism exhibiting such a G/C codon preference. As Fletcher et al demonstrate that such a use of an organism's codon preferences allows one to successfully amplify, isolate and identify gene homologues in a target organism of interest, an ordinary artisan would have been motivated to have made such a modification for the advantage of successfully isolating and identifying novel gene homologues in any organism exhibiting such a G/C codon preference. With further regard to claim 34, it is noted that the PCR products taught by

Fletcher et al were labeled and used to probe *P. carinii* genomic DNA (see pages 171, left column); it is a property of the digested target DNA taught by Fletcher et al that it constitutes a type of *P. carinii* genomic library. With further regard to claim 36, it is noted that Tyson et al teach that at least some monocot plants exhibit a G/C codon preference as compared to dicot plants (see, e.g., page 339, right column). Accordingly, an ordinary artisan would have been motivated to have practiced the method suggested by Fletcher et al in view of Tyson et al with regard to any such monocot plant, substituting third position G/Cs in codons of a sequence originating in a dicot plant, for the advantage of successfully isolating and identifying the homologous sequence in the monocot plant.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Diana B. Johannsen whose telephone number is 571/272-0744. The examiner can normally be reached on Monday and Thursday, 7:30 am-4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached at 571/272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Diana B. Johannsen
Primary Examiner
Art Unit 1634